
Enhancing English Language Skills using Multimedia: Tried and Tested

Johanna Klassen & Philip Milton
City University of Hong Kong

ABSTRACT

This article reports on a research project conducted at the City University of Hong Kong which evaluated the effectiveness of a multimedia-based English language learning programme. A major component of the project was the development and production of an interactive multimedia CD-ROM, *Business English*, which constituted the basis for the enhanced English language proficiency programme. Results of the study indicate that students who completed the syllabus in a multimedia-enhanced mode demonstrated significant improvement in listening skills when compared with students who completed the same syllabus in the traditional classroom mode. The results also demonstrate positive attitudinal changes for the multimedia-enhanced mode of learning. Additionally, the article elaborates on the teaching–learning experience from the student and facilitator perspective.

1. INTRODUCTION

A research project was carried out at City University of Hong Kong in 1997 to explore the effectiveness of multimedia-enhanced instructional materials in an English language learning curriculum. The course then known as the English Foundation Programme (EFP) has since been changed; however, as the research was carried out under the course title of the EFP, this title shall be used.

Incoming students who scored low in the Hong Kong public examination, used as university entrance requirements, took the EFP as a prerequisite. During their first year, these students were required to attend 80% of classroom instruction totalling 28 hours, with class sizes of approximately 12 students. For this research project the experimental group from the Business Faculty was taught in a multimedia-enhanced (MM) mode and the control

Correspondence: Johanna Klassen, City University of Hong Kong, Tat Chee Avenue, Professional Development & Quality Services, Chen Yick Chi Building 3240, Kowloon, Hong Kong. E-mail: pdklasse@cityu.edu.hk.

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group in the traditional classroom (CL) mode. The syllabus and the number of classes taught were the same for both experimental and control groups.

The purpose of this paper is (i) to evaluate the effectiveness of the multimedia-enhanced mode of learning with regards to English language proficiency and self-efficacy of students, and (ii) to elaborate on the teaching–learning experience from the student and facilitator perspective.

2. RATIONALE

Interactive teaching methods have long been considered a superior approach for teaching subject material and skills in the area of business and management (Michaelson, 1993). These methods may include in-class processes such as debates, case studies, and role plays. As computers have become more widely used, computer-supported presentation methods and computer-assisted instruction (CAI) have also been shown to be effective tools in teaching business subjects. These additional tools have been employed both to enhance in-class instruction and to supplement class instruction with autonomous learning (Bigelow, 1993).

Educational research has also shown that self-learning and interactive multimedia are particularly effective in facilitating teaching of English skills (Cates, 1992; Hill, 1988; Laurillard, 1995; Meskill, 1996; Squires & Preece, 1996). However, it was felt that learning of these language skills would have the greatest benefit to students if the skills were applied to their major subject of study. For example, business students would derive greater benefit from learning English in the context of business situations. Thus, enhancing instructional materials so that they not only provide activities in English but also assist students in better understanding and mastering the content of the business classes they are currently taking should increase the motivation of students to improve their English and result in improved performance. Consequently, the first research question addressed by this study is: Does a multimedia-enhanced English language learning programme which addresses English language skills in a business context yield better English proficiency results than programmes that concentrate on English language teaching alone?

Research suggests that individual learning in management education is strongly influenced by language abilities, and that management education can be enhanced through the use of computer-assisted instruction and teaching methods that encourage student involvement (Cameron & Whetton, 1993).

Therefore, use of interactive multimedia programmes should influence student beliefs in their ability to improve their English performance. The second research question addressed in this study is: Does the use of multimedia-enhanced English language learning materials improve the self-efficacy of students beyond levels achieved through present instructional materials?

3. METHODOLOGY

3.1. Syllabus

Both the control group (classroom, CL) and the experimental group (multimedia-enhanced, MM) followed the same syllabus covering the skills of reading, writing, listening, speaking and grammar. A bank of materials was provided for teaching students of the control group from which approximately 50% were required teaching materials and 50% to be selected by the lecturer. The researchers of the experimental group were given the freedom to design materials only for speaking, listening and writing in the multimedia mode. The CD-ROM, *Business English*, was developed and used for this purpose. Students in the MM group were required, not only to complete a number of the required tasks and learning activities within the English Foundation programme (EFP) and to work through the CD-ROM, but also to undertake the same exit examination as their CL counterparts. This meant that students undertaking the MM mode syllabus used the interactive multimedia package for approximately 75% of their sessions whilst the remaining 25% of the learning programme was conducted in the classroom.

3.2. Subjects

Three control groups ($n = 27$) taken from the First year Business Faculty students completed the EFP in the CL mode and three experimental groups ($n = 30$) in the MM mode.

3.3. Data collection instruments and procedures

In an effort to ensure a level of consistency in the teaching/learning programme of each of the groups, there was an attempt to maintain an equal balance of male and female students in each of the groups. To avoid possible inconsistencies in teaching style, the same lecturer was responsible for each of the MM and the CL groups.

To measure the improvement made by the CL and MM mode students, the same test was used for the pre-test and post-test, and the same assessor was used for both tests to ensure consistency in marking. The time period from the pre-test to the post-test was 12 weeks. The test was a condensed version of the Hong Kong Higher Level English Examination papers, 1989 and 1990, with equal weighting given to listening, writing and usage. The tests were not returned to the students; however, they received feedback on their individual performance.

Further, since both groups wrote the same departmental exit exam, a comparison was made of the improvement that each group made from the pre-test to the exit exam.

To determine if there were any changes in the self-efficacy of the students, a questionnaire (Appendix 1) was given to both groups at the beginning and end of the programme. Twenty-four students in each group were given a 6-point scale ranging from *strongly agree* to *strongly disagree*, as well as preferences to be ranked.

3.4. Data analysis

A t-test to evaluate the compatibility of the control and experimental groups was carried out at the pre-test stage. For the analysis of the English proficiency (pre- and post-tests) and the difference in attitudes (questionnaires), the SPSS package was used.

4. RESULTS

The data from the pre- and post-test, questionnaires and interviews were used to answer the two research questions.

4.1. Pre- and post-tests

Research question 1

Does a multimedia-enhanced language learning programme which addresses English language in a business context yield better English proficiency results than programmes that concentrate on English language teaching alone?

Table 2 indicates that in the post-test both the control and experimental group showed significant improvement in writing, listening and the total mark. According to the pair-wise t-test (Table 1), at the beginning of the course the two groups were compatible in writing and usage, with the CL group being significantly better in listening and overall marks. At the post-test stage there

Table 1. Test for Significance of the Difference between the CL and MM Mode.

	CL minus MM group	
	Pre-test	Post-test
Writing	0.7135 (–)	0.8989 (–)
Listening	0.0005 (+)	0.4442 (+)
Usage	0.9155 (+)	0.8471 (+)
Overall Marks	0.0162 (+)	0.5364 (+)

Where – means that the result in the multimedia group is better than that of the control group.
Where + means that the result in the control group is better than that of the multimedia group.

Table 2. Test for Significance of the Difference between Pre- and Post-test.

	CL	MM
Writing	0.0001 (–)	0.0001 (+)
Listening	0.0003 (+)	0.0001 (+)
Usage	0.0917 (+)	0.1256 (+)
Overall Marks	0.0001 (+)	0.0001 (+)

Where + means that the result in the post-test is better than that of the pre-test.

was no significant difference evident in the two groups in all four aspects (writing, listening, usage, total marks).

As mentioned, both groups underwent a final examination for the department. Table 3 indicates that in writing both modes improved significantly when comparing pre-test and exit exam results; in listening, however, the MM mode made significantly more improvement than the CL mode.

Table 3. Test for Significance of the Difference between Pre-test of the CL/MM Mode and the Exit Exam.

	CL minus EXIT	MM minus EXIT
Writing	0.0001 (–)	0.0000 (–)
Listening	0.855	0.0059 (–)
Overall Marks	0.5379	0.1439

Where – means that the result of the exit exam is better than that of the pre-test.

4.2. Questionnaires

Research question 2

Does the use of multimedia-enhanced English language learning materials improve the self-efficacy of students beyond levels achieved through present instructional materials?

Results of the questionnaire (Table 4, given at the beginning and end of the programme) show that at the beginning more MM mode students agreed with questions Q6 (regarding use of computers), Q10 (regarding use of CALL), and Q13 (regarding use of magazines), but this significance disappears at the end. With regard to Q16 (high priority given to multimedia) and Q17 (high priority given to CALL), the MM mode exhibits a more positive attitude at the beginning *and* end of the programme.

5. DISCUSSION

5.1. Proficiency in the pre- and post-tests

It was not surprising to find the relatively high level of compatibility between the two groups since all students taking the course were those in need of English enhancement (D and E in the Hong Kong Higher Level Examination).

Naturally it is pleasing to find that all students who undertook this learning programme demonstrated improvement in the skills areas; it is perhaps more significant to note that those students involved in the MM enhanced programme performed equally as well as their CL counterparts.

A closer analysis of student performance within the language skills areas indicates a significant and interesting result. At the pre-test stage the CL mode demonstrates a higher proficiency in listening skills; however, the post-test result indicates that the difference no longer exists. In other words, the MM group demonstrated considerable improvement in listening skills to the point that there was no longer any discernible difference between the two groups. A similar pattern is exhibited when the overall test results are analysed. Again, no significant difference is evident at the post-test stage.

5.2. Results of exit exam

Results from the pre-test were later compared with results obtained from the Language Institute's exit examination (Table 3). Due to the nature of the exit

Table 4. Results of Questionnaire.

	Pre-test CL minus MM p	Post-test CL minus MM p	All students pre minus post p
Q1	0.5153	0.6079	0.1234
Q2	0.1666	0.2153	0.3246
Q3	0.7604	0.9125	0.01726 (+)
Q4	0.1384	0.8955	0.6507
Q5	0.1327	0.6176	0.1692
Q6	0.00114 (+)	0.1604	0.9301
Q7	0.553	0.6498	0.9146
Q8	0.47692	1	0.5878
Q9	0.3084	0.1506	0.5591
Q10	0.02724 (+)	0.6123	0.3411
Q11	0.4347	0.4217	0.2594
Q12	0.7813	0.1618	0.8264
Q13	0.03174 (+)	0.7496	0.4219
Q14	0.359	0.9363	0.6154
Q15	0.7383	0.9261	0.9499
Q16	0.04824 (+)	0.01335 (+)	0.1146
Q17	0.00314 (+)	0.00735 (+)	0.2533
Q18	0.591	0.04545 (+)	0.4927
Q19	0.7499	0.0885	0.8183
Q20	0.4456	0.945	0.6412
Q21	0.8865	0.7078	0.8489
Q22	0.887	1	0.2459
Q23	0.6777	0.2158	0.2391
Q24	0.8683	0.7828	0.1648
Q25	0.352	1	0.2128
Q26	0.2421	0.4428	0.1978
Q27	0.696	0.8354	0.3666

If the p-value is less than 0.05, it is significantly different.

examination, only results from writing and listening were compared. Although both modes demonstrated improvement in writing, evidence suggests that the MM mode performed slightly better. However, in listening, improvement of the MM group was significant. This could be explained by the greater amount of listening the MM students were exposed to and the extent of individual feedback and interactions inherent in the programme.

5.3. Attitudinal changes

Research question 2

Does the use of multimedia-enhanced language learning materials improve the self-efficacy of students beyond levels achieved through present instructional materials?

There were two results in the questionnaire analysis (Q6 regarding use of computers, Q10 regarding use of CALL) that were notable. There are several possible explanations for why the differences that were present at the pre-test disappeared at the post-test for the MM mode. First, as the programme was still in the development stage, students often experienced technical difficulties which may have affected their appreciation of the interactive capability. Also, there were limitations as to choice since some units were not available at certain times. A second possible explanation is related to the terminology used to define CALL (Q10). The MM mode students associated CALL programmes with DOS applications available on the student LAN, but saw the *Business English* CD-ROM as a multimedia programme. So when the distinction disappeared, it is possible that students were making a distinction between the older CALL programmes and the multimedia programme; thus fewer preferring CALL programmes. A third explanation could be that the CL mode students were also introduced to CALL programmes as part of the EFP and consequently developed a positive attitude to using computers and CALL.

Where students were asked in the questionnaire to rank their preferred media for learning English, the MM mode retained their strong preference for multimedia and CALL (Q16,17) from the beginning of the programme to the end.

Interestingly, the significant preference that the MM mode students had for worksheets (Q18) at the end of the programme is confirmed by comments recorded in the post-course interviews where students requested printed material and worksheets to accompany the CD-ROM. They were especially desirous of printouts of the tasks in *Business English*.

Concluding the empirical part of this paper, we suggest moderately positive results. Consideration is given that the MM group was faced not only with comprehending and working in a new technological environment, but were also involved with a very different teaching/learning approach; i.e., a self-directed mode of learning considerably different from the traditional teacher-directed learning methodology to which the Hong Kong Chinese student is accustomed. It is encouraging to see at least comparable performance to the CL mode.

6. STUDENT/TEACHER EXPERIENCE

Up to this point we have focused mainly on the empirical research. The remainder of this paper, however, will address the teaching–learning experience from the student and facilitator perspective. We shall focus on the MM group in this case and highlight changes that were observed in student and teacher behaviour and their perceived roles through the duration of the course. In particular, changes were evident in the types of student and facilitator interaction that took place and in the ways students managed their individual learning programme in the MM mode. Many of these changes in behaviour and attitude were also recorded and documented in the post-course interviews, and reference will be made to a few notable comments.

6.1. Student–facilitator interaction

Following the pre-test which was conducted in the first session of the 12-week course, in the second session the MM group was introduced to the *Business English* CD-ROM in a teacher-directed session. To maintain consistency and fairness between the experimental groups, students worked in the Computer Assisted Language Learning (CALL) room where the CD-ROM was loaded onto the individual hard disks of the PCs, rather than provided for home use. In this session, students were guided in accessing the programme through the student LAN. The navigation elements of the programme were demonstrated, as well the operation of various media controlling devices (e.g., audio and video player, recording and playback, etc.). In this session students were also given further details related to the operation of the course itself and were given explanations regarding their roles in this new mode of learning. It was explained that it was the student's responsibility to complete the units of the CD-ROM in the allotted 12 weeks. Additional course requirements, attendance and assessment procedures within the EFP were also explained. It was made clear that during the MM sessions the teacher's role would be as facilitator and adviser and not as 'traditional' teacher.

After these two introductory sessions the students embarked upon their first session in the MM mode of learning. What was noted was that students arrived in the CALL room and proceeded to work on their own. There was no obvious discussion between students sitting next to each other. They appeared simply to follow the directions on the screen and wait for any tutor instructions. Occasionally, if there was a technical problem, a student would ask for

assistance; however, generally the atmosphere in the room was quiet and apprehensive. Only when the facilitator suggested a break or announced the end of the session was there any movement or resumption of noise within the room. This pattern of behaviour repeated itself in the second session.

By the third MM session a notable change occurred. A student had been working through some tasks of the writing unit, and in particular on the structure of a business letter. The student then became involved in a discussion with the student sitting next to him and soon asked for advice from the facilitator. The discussion revolved around differences between what was being described on screen and what they had been shown in their business classes. Naturally the discussion continued between the two students and the facilitator; however, what happened next was of considerable significance. Other students became aware that the silence in the room had been broken and that the facilitator was now more than a technical adviser. They quickly realized that he was there to help and discuss problems or issues that might arise from the material they were working on. This role of the facilitator now became apparent, and before long students were calling for advice whenever they felt necessary. The dynamics within the room changed dramatically. There was a strong feeling of enthusiasm and energy emerging, even to the point of competition to 'outdo' the computer and locate differences or potential errors.

In terms of student-facilitator interaction in this new learning experience, it took approximately three sessions before the students discovered the meaning of the term 'facilitator'. Once the facilitator's role had been established, the students realized that if interaction was to take place between the student and the facilitator, then it needed to be initiated by the students themselves. They sensed a feeling of being in control of what they wanted to know rather than being controlled and told what they should know. So this change in behaviour became evident, students considering verbal and social interaction within the group as being extremely important and necessary in order to create a successful learning environment.

6.2. Time management

Another notable observation in the MM group concerned the way in which students managed their own time. As was pointed out in the introductory sessions, students needed to assume responsibility for completing the units of the CD-ROM in the allotted 12 weeks. It was emphasized that students were free to navigate through the CD-ROM in their own way or could choose to follow a semi-guided path as outlined within the programme units. In the early stages

of the course there was some dilemma for students in having to choose between the core EFP requirements and 'freedom' to direct their own course of study.

The duration of the working sessions also changed notably. During the initial sessions students would arrive at the prescribed starting time of the session and wait until the facilitator announced a short break, and then continued working until the end of the 110-minute session. Around week 4 it was noted that a number of students requested taking a short break at an earlier time than the facilitator had previously announced. Usually this followed an occurrence of a computer 'crash', when it would take a few minutes for the programme to re-boot itself. Again this habit caught on as students appreciated the opportunity of walking away from the screen and 'relaxing' from the strain of on-line reading. By the fifth MM session, since most students were taking these short breaks, the facilitator ceased announcing a mid-session break. Students were again exhibiting control over their learning programme, choosing when and how often to break. Similarly students were beginning to arrive later than the prescribed starting time and subsequently worked past the scheduled end of the session. Students were aware of the leeway in starting and ending time, providing of course that the CALL room was available at the end of the session. As students adjusted to the freedom of choosing their own learning path, they also realized that their choices need not influence their peers' learning programme, thus taking ownership of their own learning.

6.3. Feedback

In addition to the feedback received through the pre- and post-questionnaires, feedback from students in the MM group with regards to the CD-ROM and the MM mode of learning was obtained in written and taped interview form. At the start of the course each student was provided with written feedback forms covering each of the units of the CD-ROM. In these forms students were invited to express opinions or make comments about the tasks or content material and also to report any technical problems or errors that occurred in the operation of the CD-ROM. These could include comments and suggestions on screen layout and design or navigation issues. Many of these comments were either incorporated in the final version of the *Business English* CD-ROM or noted for inclusion in future productions of educational CD-ROMs.

At the end of the programme students were interviewed in groups, discussing topics related to MM learning. These were taped with the permission of the group and later transcribed for closer analysis. A number of the more

pertinent positive and negative comments are presented in Appendix 2. It is worth noting that the majority of comments and feedback received from the MM group were positive towards this mode of learning. This confirms the results of the attitudinal questionnaire discussed earlier.

7. CONCLUSION

The results of the empirical study show that a multimedia-enhanced learning programme does not adversely affect the development of language skills but in actual fact enhances the learning. If students with little or no prior experience in MM language learning are able to demonstrate significant improvement in language skills, then it could be expected that such an approach be viewed as a viable alternative. With more exposure to interactive language learning technologies, it is possible that even more significant performance would result.

The experience of the researchers and the facilitator plus the feedback from student interviews support the belief that interactive multimedia materials which integrate language skills and content-specific tasks result in increased motivation to learn and improved performance. More large-scale studies will need to be carried out to validate these findings.

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APPENDIX 1

Please complete all the following questions on the accompanying survey form.

Confidence

Using a scale where A means *Strongly Agree* and F means *Strongly Disagree*, how would you rate your confidence in the following situations?

	Strongly					
	agree			disagree		
1. Very confident when communicating in English	A	B	C	D	E	F
2. Ability in using English is very good	A	B	C	D	E	F
3. Afraid to speak to foreigners in English	A	B	C	D	E	F
4. Confident when using computers to learn English	A	B	C	D	E	F

Preferred approach to learning

	Strongly					
	agree			disagree		
5. Learning English with a teacher is better than learning by yourself	A	B	C	D	E	F
6. Computers can help us to learn English	A	B	C	D	E	F
7. Videos are very good for learning English	A	B	C	D	E	F
8. Audio tapes are very good for learning English	A	B	C	D	E	F
9. Multimedia programmes are very good for learning English	A	B	C	D	E	F
10. CALL programmes are very good for learning English	A	B	C	D	E	F
11. Worksheets are very good for learning English	A	B	C	D	E	F
12. Books are very good for learning English	A	B	C	D	E	F
13. Magazines are very good for learning English	A	B	C	D	E	F

Rank the following media for learning English in your order of preference.

Use **A** as your *most preferred* and **G** as your *least preferred*. Transfer your selections to the 'survey form'

14. videos
15. audio tapes
16. multimedia programmes
17. CALL programmes
18. worksheets
19. books
20. magazines

Attitude

Using a scale where A means *Very easy* and F means *Very difficult*, indicate how you feel about:

	Very easy			Very difficult		
21. Watching English TV/videos	A	B	C	D	E	F
22. Reading books and magazines	A	B	C	D	E	F

23. Using English in speaking

A B C D E F
24. Using English in writing

A B C D E F

Indicate your choice, with **A** for your first choice, **B** for your second choice, etc. Leave the number blank if it is not one of your choices. (You may indicate *more than one reason*.)

25. Learning English is enjoyable
26. It will help me get a good job
27. It is a requirement to take this course.
28. Others (please specify on this form)

Thank you for your time and co-operation in completing this questionnaire.

APPENDIX 2

Interviews: Positive comments

- 'It raises our interest in learning since usually lectures and tutorials are quite boring.'*
- 'It helps the nervous student avoid embarrassment when they make errors during exercises.'*
- 'We can check the results from exercises quickly with the immediate feedback.'*
- 'If a student is absent from the classroom usually he misses out, but not here.'*

Interviews: Negative comments

- 'When we get feedback we only know if it is right or wrong but doesn't tell us why.'*
- 'The computer will not correct the oral mistakes we make during this section.'*
- 'Sometimes I get very tired when I spend too much time looking at the computer.'*
- 'There is no real evaluation after each exercise, so I don't know whether my standard is improving.'*

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